

The specifications and features of the system, Terms & Conditions, Return Policy, and Warranty included in this User's Manual may be changed or updated at any time for any reasons without prior notice.

User's Manual

Front and Rear Parking Sensor System

4 Front and 4 Rear In-Bumper Sensors
Wired LED Display with Built-in Front Beeper
and Separate Rear Beeper

Model F4R4LX

For Cars, Mini-VANs, 4X4s, SUVs, and Small Trucks
(Vehicle Length Under 17 Feet)

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Included in the Box

- **8x Sensors** (in-bumper type) with attached cable and 2-pin mini plug. Cable Length: Front Sensor = 6.0m (19.6ft); Rear Sensor = 2.5m (8.2ft)
- **1x LED Display** with attached cable and 8-pin plug. Cable Length: 6.0m(19.6ft). Two small double-sided self-adhesive pads on bottom of the display
- **1x Rear Beeper (Black)** with attached cable (yellow, red-white). Cable Length: 2.5m (8.2ft).
- **1x Double-Sided Self-Adhesive Pad** for affixing the rear beeper to vehicle
- **1x Control Box**
- **1x Double-Sided Self-Adhesive Pad with Velcro Attachment** for affixing control box to vehicle
- **1x Power Cable for Control Box** with five wires (black, yellow, blue, white, and red) with a 5-pin plug on one end. Length: 2.5m (8.2ft). **Note:** the red wire for ACC is 7m (23ft) with 5A fuse near the 5-pin plug
- **1x Drill Bit (Hole Saw)** - $\Phi 22.3$ mm (7/8")
- **1x User's Manual**

Features

- Front and Rear Parking Sensor System to provide good coverage of both front and rear end of vehicle
- 4 front and 4 rear in-bumper sensors to give the look of factory installed system
- Wedged sensor edge to adjust for non-vertical bumpers
- Rear sensors activated when reversing and front sensors activated when forward parking with braking
- Designed for cars, SUVs, 4x4s, Mini-VANs, and small trucks (vehicle length under 17")
- Wired LED display with built-in front beeper with On/Off switch. Sounds only when front sensors are working (when forward parking)
- Separate rear beeper sounds only when rear sensors are working (when reversing)
- Beeping faster when getting closer to obstacle
- Seven (7) LED Lights on each side of the display to show both orientation of obstacles and Safe/Warning/Stop zone indicated by blue/yellow/red LED lights
- Distance display in meters
- Limited 12 Month Warranty

Specifications (for reference only and may be changed without prior notice)

- FCC CE ISO9001 Approved
- Operating Voltage: DC +10.5 ~ +16V
- Detecting Range
 - Front Sensors:
 - E,H: 0.6m (2ft); F,G: 0.8m (2.6ft)
 - Rear Sensors:
 - A,D: 1.0m (3.3ft); B,C: 2.0m (6.6ft)
- Measuring Error: ± 0.1 m
- Sensor Detection Angle: 90°
- Sensor Diameter: $\Phi 22$ mm (0.87")
- Sensor Length: 21mm (0.83")
- Detection Response Time: 300ms
- Ultrasonic Frequency: 40Khz
- Audible Alert Volume: 60 db
- Maximum Power Consumption: 4W
- Current Consumption: 100~300mA
- Operating Temperature Range: -30 ~ +70°C
- Dimensions of the Control Box: WxDxH = 11.0cm x 8.0cm x 3.0cm (4.3" x 3.1" x 1.2")
- Dimensions of the LED Display: WxDxH = 10.0cm x 4.0cm x 2.0cm (3.9" x 1.6" x 0.8")
- Size of the rear beeper: diameter = 5.2cm(2.1"); thickness = 1.5cm(0.6")

Customer Service and Technical Support

For customer service and technical support, visit our Web site as listed below, then click on the link [Contact Us](#).

Spare and Replacement Parts

To order spare and replacement parts for your system, visit our Web site as listed below, then click on the link [Replacement Parts](#).

Opened returns are subject to a 25% re-packing and re-stocking fee.
Returns which are damaged or have parts missing (not caused by shipping process) may be subject to a greater re-stocking fee, or charged at their full retail prices and deducted from refund amount.

Shipping and Handling fee is not refundable.

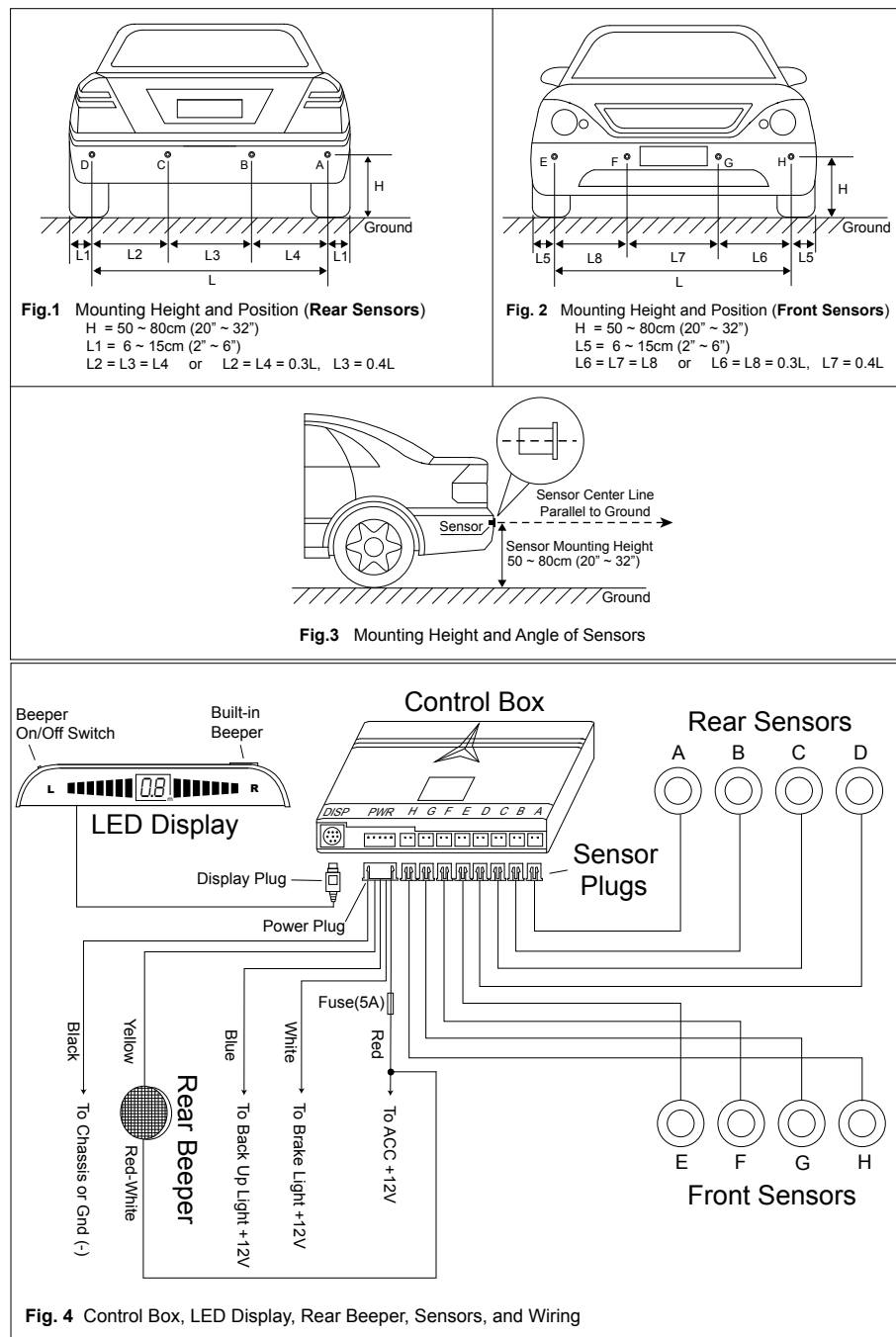
Returns are not acceptable if the packaging is not in its original condition or the item has been used or installed.

International orders are not returnable.

If a domestic or international shipment is refused by the customer or customs and returned back to us, a 15% restocking fee will apply less the shipping cost and any other fees incurred if any to the customer. It is the customer's responsibility to make all arrangements with us for refused shipments.

You are responsible for the shipping and handling cost to mail the defective parts, returns, exchanges, and items for Warranty back to us and for us to ship them to you.

You are responsible for the customs duty, tariff or import tax charged by the customs in your country.



How the System Works

The Parking Sensor System determines obstacle distance by measuring the time needed for the ultrasonic wave emitted by a sensor to reach an obstacle and for the sensor to receive the ultrasonic wave reflected from the obstacle. Given the speed of the ultrasonic wave, the system can then calculate and display the distance between the sensor and the obstacle.

To provide good coverage for both front and rear end of vehicle, the system comes with 8 sensors (4 front and 4 rear sensors). ♦ To have the look of factory installed system, the 8 sensors are in-bumper type (to be installed in the front and rear bumpers by drilling holes through the bumpers). ♦ Controlled by +12V from the back up light, the rear sensors are activated when the vehicle is put in reverse. ♦ Controlled by +12V from the brake light, the front sensors are activated when forward parking/driving with braking. ♦ It comes with a wired LED display which shows the distance of an obstacle in front or rear of the vehicle (displayed as 0.0 if obstacle is within 0.3m or 1 foot). Seven (7) LED Lights (3 Blue/2 Yellow/2 Red) on each side of the distance display show both orientation of obstacles (left and/or right) and Safe/Warning/Stop zone indicated by blue/yellow/red LED lights. ♦ One audible alert (beeper) is built in the display with volume On/Off switch, and sounds only when the front sensors are working (when forward parking) ♦ And a separate rear beeper is to be mounted near the rear end of the vehicle and gives alert only when the rear sensors are working (when reversing). ♦ The system beeps faster as vehicle gets closer to obstacle and sounds continuously when vehicle is within 0.4m (1.3ft) from an obstacle.

Note:

- ♦ The front sensors will continue to work for 10 more seconds after brake is released.
- ♦ The system may beep once under the following conditions to let the driver know the system is activated and ready or deactivated: (1) When vehicle is started or ACC is turned on or off (2) When vehicle is put in Reverse gear.

Tools Needed

Φ22.3mm (7/8") drill bit (include), drill, tape measure, chalk or marker, wire stripper, vinyl electrical tape, cable/wire ties, voltage meter or test light, screw driver set, pliers.
Note: Use a bi-metal 22.3mm (7/8") drill bit (not included) if drilling through metal bumpers.

Installation and Wiring

IMPORTANT: (a) Read this manual thoroughly before proceeding to installation. You can also have the system installed by a professional installer such as your local auto mechanic/auto electrician/car stereo store. (b) Turn off the engine and ACC during installation. (c) Double check that all wiring is correct before powering on the system. (d) During installation, avoid flattening, perforating, cutting, and extending the wires of sensors to reduce unnecessary signal loss.

1. Installing the Control Box

- Find a flat and clean surface for the control box inside the vehicle near driver's side taillight assembly.
Note: To avoid possible interferences from the taillight assembly, keep the control box away from the taillight assembly for at least 12". As the control box is not water-proof type, you need to mount the control box to a location that is protected from water. Keep it away from areas of high heat, high humidity, direct sunlight, and electromagnetic devices.
- Place the control box in place temporarily without securing it to the vehicle as you may need to adjust the location of the control box while wiring.
Note: After completing all wiring, use the double-sided self-adhesive pad (included) to secure it to the vehicle.
- Insert the 5-pin plug of the power cable for the control box into its 5-pin socket labeled "PWR" on the front side of the control box. See Fig. 4 for details.

Warnings

- To avoid collision with obstacle because of the inertia of vehicle while backing up/parking, keep your vehicle speed at about **3 miles per hour** and stop the vehicle immediately once you hear the continuous beeping. This is because even if you have applied brake, your vehicle will still go for some distance (inertia) before it comes to a complete stop.
- Because the parking system detects obstacle by emitting ultrasonic wave and receiving reflected ultrasonic wave from obstacle, the system may fail to give both visual and audible alert if an obstacle has smooth ball-shaped or sloped surfaces as such surfaces may not reflect ultrasonic wave back to the sensors. Drivers in these situations should pay more attention while parking their vehicles.
- In heavy rain or snow, the system may give alert as falling rain or snow may be detected as obstacles. Keep surface of sensors clean of snow, mud, dirt, and other debris.

Terms & Conditions, Return Policy, and Warranty

IMPORTANT: the parking sensor systems and parts sold and distributed by us are only devices used to assist a driver while parking. They should not be considered as a substitute for driver responsibility when operating a vehicle. No warranty as to operational efficiency is granted. We don't guarantee or assume liability for collisions or damages that take place when parking your vehicle with use of the parking sensor systems or parts. We will not be liable for any claims, actions, suit proceedings, costs, expenses, damages or liabilities arising out of use of the systems or parts. By placing an order for the parking sensor system(s) or parts, customer agrees to take full responsibility of use of such system(s) or parts.

Returns/exchanges can only be accepted if they are within 15 days of your receipt of your order.

Before your return, you must e-mail our Customer Service to get your **Return Merchandise Authorization Number (RMA#)** for your return to be processed.

We offer 12-month limited warranty on our products from date of purchase. After an item(s) is/are returned to us, it/they will be checked and tested by our technical support. If the item(s) is/are found as defective in materials and workmanship, and qualified for our warranty, they will be either repaired or replaced for free (shipping cost excluded). If they are found as not qualified for our warranty, then you need to pay for the repaired or replacement items at their full retail prices (see below: Items with the following conditions are not qualified for our warranty).

The warranty excludes defects or damage due to misuse, abuse or neglect.
This warranty does not cover any cost incurred in inspection, installation and repair services involved.

Items with the following conditions are not qualified for our warranty:

Customer can cut or extend wires or cables for more flexible installations, but please note that items with wires or cables cut void the warranty on the items.

Customer can paint sensors to match his vehicle color, but please note that sensors painted by customer void the warranty on the sensors.

Sensors with any type of glue or silicone applied void the warranty on the sensors.

Items with seal (if any) broken, case (if any) opened, repaired, modified, or disassembled by customer void the warranty.

Items for return must be in new, uninstalled, unused, re-sellable condition, including the original packaging, manufacturer's containers, documentation, warranty cards, manuals, and all accessories.

Re-packing and Re-stocking fee:

Unopened returns are subject to a 15% re-stocking fee.

Troubleshooting

Problem	Cause	Solution
Display doesn't light up when reversing or forward parking with braking	1. Display not plugged in. 2. Red wire not connected to ACC. 3. Black wire not grounded properly. 4. Blue wire not connected to backup light. 5. White wire not connected to brake light. 6. Faulty display. 7. Faulty control box.	1. Check display connection. 2. Check if red wire gets +12V from ACC. 3. Check if black wire is grounded properly. 4. Check if blue wire gets +12V from backup light. 5. Check if white wire gets +12V from brake light. 6. Replace the display. 7. Replace the control box.
Display light up but system is not detecting any obstacle	1. Sensors not connected. 2. Faulty display. 3. Faulty control box.	1. Check sensor connections. 2. Replace the display. 3. Replace the control box.
System showing distance but no beeping or system beeping but no distance displayed	1. Beeper turned off or connection problem. 2. Faulty display. 3. Faulty control box.	1. Turn on beeper or check beeper connection. 2. Replace the display. 3. Replace the Control Box.
System is not detecting any obstacle in front	White wire not connected to brake light.	Check if white wire gets +12V from brake light.
System is not detecting any obstacle in rear	Blue wire not connected to backup light.	Check if blue wire gets +12V from backup light.
Wrong LEDs light up	Sensors are plugged into the wrong ports at the control box	Install the sensors in the bumper as labeled in Fig. 1 & 2 and plug sensors as labeled on the sensor wires into their corresponding ports at the control box (Fig. 4)
Display constantly shows 0.0 or beeps continuously	1. Object within 0.3m is detected. 2. Faulty sensor(s). 3. Faulty control box. 4. Holes drilled for sensors are too tight (especially for a metal bumper).	1. Unplug all sensors, and then plug back in one sensor at a time to find out which sensor is causing the problem. Adjust angle of the sensor so it points upward a few degrees above horizontal line. Refer to 5. Installing the Sensors for details. 2. Replace the sensor(s). 3. Replace the main control box. 4. Carefully enlarging sensor holes a little with a small round file.
Display shows a distance and beeps even there is no obstacle behind or in front	1. Ground is detected, or sensor angle is low towards the ground, or sensors installed too low (mounting height below 0.5m). 2. Holes drilled for sensors are too tight (especially for a metal bumper).	1. Unplug all sensors, and then plug back in one sensor at a time to find out which sensor is causing the problem. Adjust angle of the sensor so it points upward a few degrees above horizontal line. Refer to 5. Installing the Sensors for details. 2. Carefully enlarging sensor holes a little with a small round file.

For more installation related questions and Frequently Asked Questions (FAQs) with answers, and product photos, visit our Web site at <http://parkingsensors.net>

Important Notes for Installing the Control Box:

Don't mount the control box near or under the dash or in the cab of a truck.

The control box is designed to be mounted near the rear end of a vehicle (near taillight assembly) to avoid interferences from the engine which may cause false alert such as continuous beeping and 0.0 display.

If installing the System to a Truck, as the control box is not water-proof type, you may need to first mount the control box in a small water-proof metal or plastic box (not included with the system), then fix it to a location near the rear end of the truck.

Note: Some lights (turn signal/brake/reverse/stop lights) may emit interferences that can affect the signals the control box receives therefore cause the system to give false alert. After installation, if you experience **false alert caused by turn signal light, or brake/reverse/stop lights**, try to put the control box as far as possible away (at least 12 inches) from the taillight assembly (turn signal/brake/reverse/stop lights).

2. Wiring the Control Box - Refer to Fig. 4 for the following wiring.

- Locate the +12V wire from the back up light near the taillight assembly. If necessary, remove the taillight assembly and use a voltage meter or test light to locate/verify it. The wire is easy to be identified/confirmed as it has +12V only when vehicle is in reverse. Strip 1/2" of the wire found. Connect the **blue wire** of the power cable to it. Wrap it with vinyl electrical tape.
- Locate the (-) negative wire from the back up light near the taillight assembly. Or instead of (-) negative wire from the back up light, you can also locate a chassis ground point near by. Strip 1/2" of the wire found. Connect the **black wire** of the power cable to it. Wrap it with vinyl electrical tape.
- Locate the +12V wire from the brake light near the taillight assembly. If necessary, remove the taillight assembly and use a voltage meter or test light to locate/verify it. The wire is easy to be identified/confirmed as it has +12V only when the brake is pressed. Strip 1/2" of the wire found. Connect the **white wire** of the power cable to it. Wrap it with vinyl electrical tape.
- Under the dashboard, locate the ACC wire. It is easy to be identified/confirmed as it has +12V only when the key of the vehicle is in the ACC position or the vehicle is running. The cigarette lighter jack on the front control panel is one of the ACC wires. Strip 1/2" of the wire found. Connect the **red wire** of the power cable to it. Wrap it with vinyl electrical tape.

3. Installing the LED Display

- Find a place for the display on top of the dashboard where the driver can see it easily. Place the display in place temporarily without securing it to the top of the dashboard. **Note:** After completing all wiring, secure it with the included self-adhesive pads on the bottom of the display.
- Run the display wire from the top of the dashboard down to the floor, and then to the control box in the back of the vehicle (hide the wire under the door or weather trim).
- Insert the 8-pin plug of the display into its 8-pin socket labeled "DISP" on the front side of the control box.

4. Installing the Rear Beeper

- Find a place for the rear beeper near the rear end of the vehicle on the driver side. Place the rear beeper in place temporarily without securing it to the vehicle. **Note:** After completing all wiring, secure it with the included self-adhesive pad on the bottom of the rear beeper.
- Hide the wire under the carpet or weather trim.

5. Installing the Sensors

IMPORTANT: (a) To avoid false alert from the system detecting the ground, the sensors should be mounted in the bumpers 50cm to 80cm (20" to 32") above the ground and the face of the sensors need to be vertical or slightly upward angled (Fig.3). **(b)** Horizontally, the sensors should be equally spaced if possible or symmetric to the center of the bumper (Fig.1 and 2). **(c)** The recommended mounting positions for the outer two sensors is about 15cm (5.9") from the corner of the bumper for better corner coverage (Fig.1 and 2).

Note: The bumper surface for mounting the sensors should be as flat and vertical as possible. The sensors come with wedged edge. **Rotate the sensors to adjust for non-vertical bumper.**

For exact color match, you may have the sensors spray-painted. For best results, spray paint no more than two thin coats (not to be applied with brush or touch-up). And it is recommended that you have the sensors professionally painted by an auto body shop.

Note: although the sensors can be spray-painted for exact color match to your vehicle, sensors painted void warranty on them.

- Refer to Fig. 1 and 2 for the recommended mounting height and position of the front and rear sensors. You may need to make adjustments to them for your specific vehicle.
- Work under the front and rear bumpers to check the internal structure of them before marking the positions for drilling holes. Remove the bumpers if the view is blocked.
- With chalk or marker, mark the position of sensors on the bumpers. Make sure that the sensors can be pushed all the way in and that you can feed the wires through.
- Drill the holes through the bumpers at the marks with the $\Phi 22.3\text{mm}$ (7/8") drill bit included.
Note: if drilling through metal bumper, you will need a bi-metal $\Phi 22.3\text{mm}$ (7/8") drill bit (not included).
- If necessary, smooth the sharp edge of the holes with a polishing head or small round file.
- Run the sensor wires into the holes drilled. Push the sensors into the holes. When pushing the sensors only apply pressure at the edges, not on the middle of the sensor to avoid damage to the sensor element. The sensors are tapered for a snug fit.
- Adjust the sensors for non-vertical bumper surface by rotating the sensors as needed.
- For front sensors**, run the sensor wires from the front bumper into the inside of the vehicle through the existing wiring holes or rubber grommet in the fire wall, and then to the control box in the back of the vehicle (hide the wire under the door or weather trim). **Note:** Keep the sensor wires away from moving parts and engine heat.
- For rear sensors**, run the sensor wires from the rear bumper into the trunk or inside of the vehicle through the existing small vent or rubber grommet in the rear of the trunk or vehicle, and then to the control box.
Note: Do not cut the excess sensor wires to avoid signal loss. Sensors with wires cut also void their warranty.
- Attach sensor wires to the vehicle body with cable/wire ties so that they will not get in the way of any moving parts and there are no loose wires hanging down.
- Plug all sensors into their corresponding sockets at the control box.

Note: Only use Sensor A, B, C, and D as rear sensors, and Sensor E, F, G, and H as front sensors. Don't switch the front sensors with the rear sensors or it may cause false alert such as continuous beeping and 0.0 display.

Installing Sensors in Metal Bumpers

If you have a continuous beeping or false alert problem after installation of the system, unplug all sensors from the control box, and then plug back in one sensor at a time and test to find out which specific sensor(s) is causing the problem.

If you find a sensor that is causing false alert, please check if the sensor hole in the bumper is too tight as instructed below:
If a sensor causes false alert or gives inconsistent results, pull it out of its hole in the bumper for about 0.5 inch, tape it to the bumper so it faces upward a little bit and test to see if the false alert will stop. If the false alert stops, then the hole drilled for the sensor is a little bit tight which can apply pressure on the sensor and cause the system to give false alert.
If this is the case, then carefully enlarging the hole a little bit with a small round file should solve the problem.

Testing Your New Parking Sensor System

For the rear sensors, back up your vehicle slowly (about 3 miles per hour) to approximately 2.0m (6.6 ft) from a flat vertical surface such as a wall. Continue to back up slowly and check the performance against Chart 1.

For the front sensors, do the same test while forward parking with braking.

Note: have somebody watch the vehicle while you are doing the test.

Using the Display

The display has a built-in beeper (audible alert) with On/Off Switch. The beeper sounds only when the front sensors are working (when forward parking). There are seven (7) LED Lights (3 Blue, 2 Yellow, 2 Red) on each side of the two-digit distance display (Fig. 4). The color LED lights show both orientation of obstacle (left and/or right) and Safe/Warning/Stop zone (Chart. 1) indicated by blue/yellow/red LED lights.

Chart 1. Orientation of Obstacle, Distance Display, and Audible Alert

Reversing				
Obstacle Distance	Viewing from the Front of the Display			
	LEDs on the Left Side of the Display Responding to Rear Sensor D,C	Beeping (Audible Alert)	Distance Displaying	LEDs on the Right Side of the Display Responding to Rear Sensor B,A
Safe Zone (> 2.0m)	1 Blue Flashing	No	- -	1 Blue Flashing
Safe Zone (2.0~1.5m)	1 Blue Flashing	Starting to beep at 1.5m	Actual distance	1 Blue Flashing
Warning Zone (1.5~1.0m)	1 - 3 Blue on	Fast	Actual distance	1 - 3 Blue on
Warning Zone (1.0~0.6m)	3 Blue/1 -2 Yellow on	Faster	Actual distance	1 -2 Yellow/3 Blue on
Stop Zone (0.6~0.3m)	3 Blue/2 Yellow/1 - 2 Red on	Fastest	Actual distance	1 - 2 Red/2 Yellow/3 Blue on
Stop Zone (0.3~0.0m)	3 Blue/2 Yellow/2 Red on	Continuously	0.3 - 0.0	2 Red/2 Yellow/3 Blue on

Forward-Parking				
Obstacle Distance	Viewing from the Front of the Display			
	LEDs on the Left Side of the Display Responding to Front Sensor H,G	Beeping (Audible Alert)	Distance Displaying	LEDs on the Right Side of the Display Responding to Front Sensor F,E
Safe Zone (> 0.8m)	1 Blue Flashing	No	- -	1 Blue Flashing
Warning Zone (0.8~0.6m)	3 Blue/2 Yellow on	Starting to beep at 0.8m Faster	Actual distance	2 Yellow/3 Blue on
Stop Zone (0.6~0.3m)	3 Blue/2 Yellow/1 - 2 Red on	Fastest	Actual distance	1 - 2 Red/2 Yellow/3 Blue on
Stop Zone (0.3~0.0m)	3 Blue/2 Yellow/2 Red on	Continuously	0.3 - 0.0	2 Red/2 Yellow/3 Blue on

Note: 1meter = 3.3feet

Detection Range of the System

The parking sensor system detects obstacle by emitting ultrasonic wave and receiving reflected ultrasonic wave from an obstacle. Different materials have different reflection and absorption of the ultrasonic wave, and the actual detection distance varies depending on what materials an obstacle is composed of. Human skin and clothes actually absorb the ultrasonic wave, and can only reflect very small portion of the ultrasonic wave back to the sensors, hence **the system may detect human skin and clothes within a much shorter range compared to other materials**. Drivers in these situations should pay more attention while parking their vehicles.